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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,236	06/26/2003	Shun-ichi Ishikawa	Q76184	4220

7590 10/06/2004

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EXAMINER

HON, SOW FUN

ART UNIT PAPER NUMBER

1772

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/606,236	ISHIKAWA, SHUN-ICHI	
	Examiner	Art Unit	
	Sow-Fun Hon	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 20 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/29/03</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-19, drawn to an article, classified in class 428, subclass 1.51.

II. Claims 20-21, drawn to a method, classified in class 427, subclass 397.7.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the gas barrier film can be made with the application of heat during the hydrolysis and polycondensation process step.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mark Boland on September 07, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-19. Affirmation of this election must be made by applicant in replying to this Office action. Claims 20-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by the phrase “base film having a laminated structure of an inorganic thin film layer and organic-inorganic coating layer formed by sol-gel method on the base film”. Does it mean that the inorganic thin film layer is the base film, upon which is laminated an organic-inorganic coating layer formed by sol-gel method? Or does it mean that the base film is laminated with an inorganic thin film layer and an organic-inorganic coating layer formed by sol-gel method?

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes-Farley et al. (US 5,182,143).

Holmes-Farley teaches barrier (protective) coatings formed by the sol-gel method (column 1, lines 5-10). The multilayer coating formed by the sol-gel method can be an inorganic (single oxide network) layer coated by an organic-inorganic hybrid layer

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(additional thin outer layer containing unhydrolyzed organic moieties on the single oxide network layer) (column 5, lines 45-55). Holmes-Farley teaches that the inorganic coating acts as a corrosion barrier (column 10, lines 35-45). Oxygen and water vapor cause corrosion. Thus the inorganic coating inherently functions as a gas barrier. The base (substrate) can be a plastic (column 8, lines 48-51). Holmes-Farley teaches that the plastic can be polycarbonate (column 9, lines 1-5), but fails to teach that it is in the form of a film. However, a film support for the inorganic coating is within the realm of routine experimentation by one of ordinary skill in the art at the time the invention was made. The polycarbonate (claim 9) base film is inherently transparent and inherently has a linear thermal expansion coefficient of 40 ppm/C or lower, as defined by Applicant's specification (original claim 9); and inherently has a glass transition temperature of 100 °C or higher (claim 1), 120 °C or higher (claim 6), and 150 °C or higher (claim 7), as defined by Applicant's specification (page 6, line 5).

9. Claims 8, 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes-Farley as applied to claims 1-7, 9 above, and further in view of Pinnavaia et al. (US 6,414,069).

Regarding claims 8, 10, Holmes-Farley has been discussed above, and fails to teach that the polycarbonate base film has a linear thermal expansion coefficient of 20 ppm/°C or lower, and that it contains an inorganic layered compound.

Pinnavaia teaches a barrier film agent (column 10, lines 40-45) having an inorganic layered compound (column 1, lines 10-20) (claim 10). The polymer incorporated with the inorganic layered compound can be polycarbonate (column 15, lines 15-20) and the inorganic layered compound can be a silicate (column 15, lines 1-5).

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Silicates have very low linear thermal expansion coefficients. Therefore the claimed thermal expansion coefficient of 20 ppm/°C or lower is inherent in the barrier film (claim 8).

Regarding claim 11, Pinnavaia teaches that the weight ratio of the inorganic layered compound and a resin contained in the film is between about 1/100 and 100/1 (column 14, lines 55-60), which overlaps the claimed range of 1/100 to 100/20.

Regarding claims 12-13, Pinnavaia teaches that the inorganic layered compound contains an octadecylammonium ion (column 13, lines 55-60), which is an alkylammonium ion containing a long-chain alkyl group. The alkylammonium ion is an organic cation.

Regarding claim 14, Pinnavaia teaches 63 meq of octadecylammonium cation exchanged homoionic organoclay (column 16, lines 40-45). Hence although Pinnavaia fails to disclose the claimed amount of 0.05 to 3 equivalents of organic cation, relative to the cation exchange capacity of the inorganic layered compound, this amount is the result of routine experimentation, by one of ordinary skill in the art at the time the invention was made.

10. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes-Farley as applied to claims 1-7, 9 above, and further in view of Stein et al. (US 6,322,860).

Holmes-Farley has been discussed above, and fails to teach a display with a substrate having the gas barrier film.

Stein teaches an electronic display device (abstract) with a plastic substrate (sheet) on which are applied barrier layers (column 10, lines 1-10). These barrier layers can be

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multiple layers comprising sol-gel inorganic (layers) coatings and organic-inorganic hybrid layers (materials) (column 10, lines 20-30) (claims 16-17). The display device can be (organic) electroluminescent (claim 18) or liquid crystal (claim 19) (column 1, lines 10-20). Stein teaches that the barrier layers reduce unwanted gas or moisture permeation (column 10, lines 1-5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the gas barrier film of Holmes-Farley, comprising the inorganic and/or organic-inorganic hybrid coating layers formed by the sol-gel method, as the multilayer barrier film of Stein, in order to obtain a display substrate protected against unwanted gas permeation.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

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have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).



Sow-Fun Hon

